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Indian Standard

METHODS FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO BLEACHING WITH SODIUM CHLORITE

(*First Revision*)

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March 1989

Indian Standard

METHODS FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE MATERIALS TO BLEACHING WITH SODIUM CHLORITE

(*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards on 20 July 1988, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1958 and has been revised to align it with ISO 105/N - 1978 'Textiles — Tests for colour fastness NO3 Colour fastness to bleaching : Sodium chlorite : Mild' and ISO 105/N - 1978 'Textiles — Tests for colour fastnsess NO4 Colour fastness to bleaching; Sodium chlorite; Severe', issued by the International Organization for Standardization (ISO). Further the sampling clause and the assessment of colour fastness have been modified similar to other latest Indian Standards on colour fastness tests.

0.3 Colour fastness of textile materials is of considerable importance to the consumer. The fastness depends not only upon the nature and the depth of shade of the dyestuff used but also upon the nature of the fibre and the method of dyeing or printing employed; the same colouring matter, when used in dyeing or printing different fibres or when applied by different methods upon the same fibre, may give vastly different results. Formulation of standard methods of test for determining colour fastness of textile materials to different agencies and processes likely to effect change in colour is, therefore, necessary.

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1. SCOPE

1.1 This standard prescribes two methods for determination of colour fastness of textile materials composed of natural or regenerated cellulose, and synthetic fibres to the action of bleaching with sodium chlorite as employed in textile processing.

1.2 In the first method (*see* **6**) mainly applicable to textile materials made of regenerated cellulose and synthetic fibres, a comparatively mild test has been prescribed. In the second method (*see* **7**), mainly applicable to textile materials made of natural cellulose textiles, a comparatively severe test has been prescribed.

2. PRINCIPLE

2.1 A specimen of the textile in contact with specified adjacent fabrics is treated with sodium chlorite solution, rinsed and dried. The numerical ratings for change in colour of the specimen and staining of the adjacent fabrics are evaluated with grey scales.

3. SAMPLING

3.1 Sample to determine the conformity of a lot of coloured textile material to a specification shall be selected so as to be representative of the lot.

3.2 Sample drawn in compliance with the relevant material specification or as agreed to between the buyer and the seller to evaluate colour fastness of the material in the lot shall be held to be representative of the lot.

4. COMPOSITE SPECIMEN

4.1 Two Adjacent Fabrics — 10 × 4 cm, each made of a fibre to be assessed for staining.

4.2 Preparation of Composite Specimen

4.2.1 If the textile to be tested is fabric, place a specimen 10 × 4 cm between two adjacent fabrics and sew along all four sides to form a composite specimen.

4.2.2 If the textile to be tested is yarn, knit or weave it into fabric and treat as in **4.2.1** or form a layer of parallel lengths of it between the two adjacent fabrics, the amount of yarn taken being approximately equal to half the combined mass of the adjacent fabrics, sew along all four sides to hold the yarn in place and to form a composite specimen.

4.2.3 If the textile to be tested is loose fibre, comb and compress an amount approximately equal to half the combined mass of the adjacent fabrics, into a sheet 10 × 4 cm. Place the sheet between two adjacent fabrics and sew along all four sides to hold the fibre in place and to form a composite specimen.

5. APPARATUS

5.1 Glass Container with Reflux Condenser — or other means of reducing evaporation of the bath, and so preventing its modification during the test.

5.2 Grey Scales for Evaluating Change in Colour and Staining

6. FIRST METHOD

6.1 Reagent

6.1.1 *Sodium Chlorite Solution* — Containing one gram of sodium chlorite (800 g/kg) per litre (*see* Note) brought to *p*H 3·5 with acetic acid immediately before use.

NOTE — The concentration of sodium chlorite solution used should be determined by titration with sodium thiosulphate solution. One millilitre of 0·1 N sodium thiosulphate solution is equal to 0·002 26 g of sodium chlorite ($NaClO_2$).

6.2 Procedure — Wet out the composite specimen in sodium chlorite solution and immerse it in bath containing sodium chlorite solution for one hour without agitation at a temperature of 80 ± 2°C, using a liquor ratio of 50 : 1. At the end of the period, remove the specimen from the bath and rinse it for 10 minutes in cold running tap water. Remove the stitching from two long sides and one short side of the specimen, open it out and dry it in air in shade at a temperature not exceeding 60°C with the three parts in contact only at the remaining line of stitching.

6.3 Evaluation — Evaluate the change in colour of the test specimen by the method prescribed in IS : 768 - 1982* and the degree of staining of two pieces of adjacent fabrics by the method prescribed in IS: 769 - 1982†.

NOTE 1 — Treated test specimens and the pieces of adjacent fabrics should have cooled after drying and should have regained their normal moisture content before evaluation.

NOTE 2 — In case of doubt in the assessment of colour fastness ratings by a single observer, the assessment should be done by at least three observers and the overall average rating should be reported.

7. SECOND METHOD

7.1 Reagent

7.1.1 *Sodium Chlorite Solution* — containing 2·5 g of sodium chlorite (800 g/kg) per litre (*see* Note under **6.1**) and 0·1 g of tetrasodium pyrophosphate ($Na_4P_2O_7.10H_2O$) per litre, brought to *p*H 3·5 with formic acid immediately before the test.

7.2 Procedure — Same as in **6.2**.

7.3 Evaluation — Same as in **6.3**.

8. REPORT

8.1 The report shall include:

a) The numerical rating for change in colour of the test specimen,

b) The numerical ratings for staining of two adjacent fabrics used in the preparation of the composite specimen, and

c) The method used.

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*Method for evaluating change in colour (*first revision*).

†Method for evaluating staining (*first revision*).